

SEQUENCE LISTING

<110> Adler, David A.
 Holloway, James L.
 Baidur, Nand
 Beigel-Orme, Stephanie
 Sheppard, Paul O.

<120> NOVEL BETA-DEFENSINS

<130> 97-44C1

<150> 60/058,335

<151> 1997-10-09

<150> 60/064,294

<151> 1997-11-05

<150> 09/150,786

<151> 1998-09-10

<160> 72

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 219

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(195)

<400> 1

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| atg | agg | atc | cat | tat | ctt | ctg | ttt | gct | ttg | ctc | ttc | ctg | ttt | ttg | gtg | 48 |
| Met | Arg | Ile | His | Tyr | Leu | Leu | Phe | Ala | Leu | Leu | Phe | Leu | Phe | Leu | Val | |
| 1 | | | 5 | | | | 10 | | | | | 15 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| cct | gtt | cca | ggt | cat | gga | gga | atc | ata | aac | aca | tta | cag | aaa | tat | tat | 96 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|

Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30

tgc aga gtc aga ggc ggc cgg tgt gct gtg ctc agc tgc ctt cca aag 144
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 35 40 45

gag gaa cag atc ggc aag tgc tcg acg cgt ggc cga aaa tgc tgc cga 192
 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
 50 55 60

aga aagaaataaa aaccctgaaa catg 219
 Arg
 65

<210> 2

<211> 65

<212> PRT

<213> Homo sapiens

<400> 2

Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
 1 5 10 15

Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
 20 25 30

Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 35 40 45

Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
 50 55 60

Arg
 65

<210> 3

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Cysteine motif of the Beta-defensin family

<221> VARIANT

<222> (2)...(7)

<223> Xaa2 is independently any amino acid residue.

preferably not cysteine.

Xaa3 is independently any amino acid residue,
preferably not cysteine.

Xaa4 is independently any amino acid residue,
preferably not cysteine.

Xaa5 is independently any amino acid residue,
preferably not cysteine.

Xaa6 is independently any amino acid residue,
preferably not cysteine.

Xaa7 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT

<222> (9)...(12)

<223> Xaa9 is independently any amino acid residue,
preferably not cysteine.

Xaa10 is independently any amino acid residue,
preferably not cysteine.

Xaa11 is independently any amino acid residue,
preferably not cysteine.

Xaa12 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT

<222> (14)...(20)

<223> Xaa14 is independently any amino acid residue,
preferably not cysteine.

Xaa15 is independently any amino acid residue,
preferably not cysteine.

Xaa16 is independently any amino acid residue,
preferably not cysteine.

Xaa17 is independently any amino acid residue,
preferably not cysteine.

Xaa18 is independently any amino acid residue,
preferably not cysteine.

Xaa19 is independently any amino acid residue,
preferably not cysteine.

Xaa20 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT

<222> (22)...(22)

<223> Xaa is any amino acid residue, preferably not

cysteine

<221> VARIANT

<222> (24)...(29)

<223> Xaa24 is independently any amino acid residue,
preferably not cysteine.

Xaa25 is independently any amino acid residue,
preferably not cysteine.

Xaa26 is independently any amino acid residue,
preferably not cysteine.

Xaa27 is independently any amino acid residue,
preferably not cysteine.

Xaa28 is independently any amino acid residue,
preferably not cysteine.

Xaa29 is independently any amino acid residue,
preferably not cysteine.

<400> 3

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Xaa | Xaa | Xaa | Xaa | Xaa | Xaa | Xaa | Cys | Xaa | Xaa | Xaa | Xaa | Cys | Xaa | Xaa | Xaa |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | | |
| Xaa | Xaa | Xaa | Xaa | Gly | Xaa | Cys | Xaa | Xaa | Xaa | Xaa | Xaa | Xaa | Cys | Cys | | |
| | | | 20 | | | | 25 | | | | | | 30 | | | |

<210> 4

<211> 213

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate nucleotide encoding the polypeptide of
SEQ ID NO:2

<221> variation

<222> (1)...(213)

<223> Nucleotides 12, 15, 21, 24, 27, 33, 39, 42, 45,
48, 51, 54, 60, 63, 75, 78, 98, 99, 100, 106, 109,
112, 115, 118, 121, 127, 130, 133, 136, 142, 145,
163, 172, 175, 178, 181, 184, 196, and 199 are
each independently A, T, G or C.

<400> 4

| | |
|--|-----|
| athcaytayy tnytnnttygc nytnytnntty ytnttyytng tncngtncc nggncayggn | 60 |
| ggnathatha ayacnytnca raartrnnn tgyngngtnm gngngngnmg ntgygcngtn | 120 |

ytnwsntggy tncnaarga rgarcarath ggnaartgyw snachmgngg nmgnaartgy 180
 tgygmngmna araartrraa rccntrraay atg 213

<210> 5

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide ZC14741

<400> 5

gagcacttgc cgatctgttc 20

<210> 6

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide ZC14740

<400> 6

ccaggtcatg gaggaatcat 20

<210> 7

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide ZC14780

<400> 7

ggaggaatca taaacaca 18

<210> 8

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide ZC14776

<400> 8
gccgatctgt tcctcctt

18

<210> 9
<211> 438
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (220)...(420)

<400> 9
acaaatccat agggagctct gccttaccat tgggttccta attaactgag tgagtgggtg 60
tgttctgcat ggtgagaggc attggaatga tgcatacagaa aacatgtcat aatgtcatca 120
ctgtaatatg acaagaattg cagctgtggc tggaaccttt ataaagtgac caagcacacc 180
tttcatcca gtctcagcgt ggggtgaagc ctacagct atg agg atc cat tat 234
Met Arg Ile His Tyr
1 5
ctt ctg ttt gct ttg ctc ttc ctg ttt ttg gtg cct gtt cca ggt cat 282
Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val Pro Val Pro Gly His
10 15 20
gga gga atc ata aac aca tta cag aaa tat tat tgc aga gtc aga ggc 330
Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Gly
25 30 35
ggc cgg tgt gct gtg ctc agc tgc ctt cca aag gag gaa cag atc ggc 378
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Gly
40 45 50
aag tgc tcg acg cgt ggc cga aaa tgc tgc cga aga aag aaa 420
Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg Arg Lys Lys
55 60 65
taaaaaccct gaaacatg 438

<210> 10
<211> 67
<212> PRT
<213> Homo sapiens

<400> 10

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Met | Arg | Ile | His | Tyr | Leu | Leu | Phe | Ala | Leu | Leu | Phe | Leu | Phe | Leu | Val |
| 1 | | | 5 | | | | | 10 | | | | 15 | | | |
| Pro | Val | Pro | Gly | His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Lys | Tyr | Tyr |
| | | | 20 | | | | 25 | | | | | 30 | | | |
| Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys |
| | | 35 | | | | 40 | | | | | 45 | | | | |
| Glu | Glu | Gln | Ile | Gly | Lys | Cys | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Cys | Arg |
| | 50 | | | | 55 | | | | | 60 | | | | | |
| Arg | Lys | Lys | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | |

<210> 11

<211> 219

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate nucleotide sequence encoding the polypeptide of SEQ ID NO:10

<221> variation

<222> (1)...(219)

<223> Nucleotides 6, 18, 21, 27, 30, 33, 39, 45, 48, 51, 54, 57, 60, 66, 69, 81, 84, 94, 95, 96, 102, 105, 108, 111, 114, 117, 123, 126, 129, 132, 138, 141, 159, 168, 171, 174, 177, 180, 192, 195, and 210 are each independently A, T, C, or G.

<400> 11

| | | | | | | |
|------------|------------|------------|------------|------------|------------|-----|
| atgmgnathc | aytayytnyt | nttygcnytn | ytnttyytnt | tyytngtncc | ngtnccnggn | 60 |
| cayggnggna | thathaayac | nytnccaraa | trnnntgym | gngtnmgngg | nggnmgntgy | 120 |
| gcngtnytnw | sntgyytncc | naargargar | carathggna | artgywsnac | nmgnggnmgn | 180 |
| aartgytgym | gnmgnaraa | rtrraarccn | trraayatg | | | 219 |

<210> 12

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide ZC15591

<400> 12
tgccgatctg ttcctccttt g 21

<210> 13
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide ZC15589

<400> 13
gaacaggcac caaaaacagg aagag 25

<210> 14
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 14
Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
1 5 10 15
Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
20 25 30
Lys Cys Cys Arg Arg
35

<210> 15
<211> 29
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> Xaa is Leu, Ile, Val, Phe or Met.

<400> 15

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | | |
| | | | 20 | | | | | 25 | | | | | | | |

<210> 16

<211> 30

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (26)...(26)

<223> Xaa is Leu, Ile, Val, Phe or Met.

<400> 16

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | | |
| | | | 20 | | | | | 25 | | | | | 30 | | |

<210> 17

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (26)...(26)

<223> Xaa is Leu, Ile, Val, Phe or Met.

<400> 17

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | | | | | |
| | | | 20 | | | | | 25 | | | | | | | |

<210> 18
 <211> 38
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 18
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys
 35

<210> 19
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 19
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
 20 25 30
 Lys Cys Cys Arg Arg Lys Lys
 35

<210> 20
 <211> 44
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin Polypeptide

<400> 20
 Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
 1 5 10 15

Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 21

<211> 43

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 21

Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 22

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 22

Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
 20 25 30
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg
 35 40

<210> 23

<211> 43

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 23

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Thr | Arg | Tyr | Arg | Lys | Cys | Cys | Arg | Arg | Lys | Lys | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 24

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 24

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Thr | Arg | Tyr | Arg | Lys | Cys | Cys | Arg | Arg | Lys | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 25

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 25

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Thr | Arg | Tyr | Arg | Lys | Cys | Cys | Arg | Arg | | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 26

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 26

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser | Thr |
| | | | 20 | | | | 25 | | | | | | 30 | | |
| Arg | Tyr | Arg | Lys | Cys | Cys | Arg | Arg | Lys | Lys | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 27

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 27

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser | Thr |
| | | | 20 | | | | 25 | | | | | | 30 | | |
| Arg | Tyr | Arg | Lys | Cys | Cys | Arg | Arg | Lys | | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 28

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 28

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser | Thr |

Arg Tyr Arg Lys Cys Cys Arg Arg
 35 40 25 30

<210> 29
 <211> 41
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 29
 Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 30
 <211> 40
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 30
 Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg Lys
 35 40

<210> 31
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<400> 31

Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
 1 5 10 15
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
 20 25 30
 Tyr Arg Lys Cys Cys Arg Arg
 35

<210> 32

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 32

Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys Lys
 35 40

<210> 33

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 33

Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
 1 5 10 15
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
 20 25 30
 Arg Lys Cys Cys Arg Arg Lys
 35

<210> 34

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 34

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Lys | Tyr | Tyr | Cys | Arg | Val | Arg | Tyr | Tyr | Arg | Cys | Ala | Val | Leu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Cys | Leu | Pro | Lys | Glu | Glu | Gln | Ile | Tyr | Lys | Cys | Ser | Thr | Arg | Tyr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Lys | Cys | Cys | Arg | Arg | | | | | | | | | | |
| | | | 35 | | | | | | | | | | | | |

<210> 35

<211> 49

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (45)...(45)

<223> Xaa is leu, ile, val, phe, or met

<400> 35

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gly | His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu |
| | | | 20 | | | | | 25 | | | | 30 | | | |
| Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys |
| | | | 35 | | | | 40 | | | | | 45 | | | |
| Lys | | | | | | | | | | | | | | | |

<210> 36

<211> 48

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (45)...(45)

<223> Xaa is leu, ile, val, phe, or met

<400> 36

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gly | His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys |
| | | 35 | | | | | 40 | | | | | 45 | | | |

<210> 37

<211> 48

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> Xaa is leu, ile, phe, val, or met

<400> 37

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys |
| | | 20 | | | | | | 25 | | | | | 30 | | |
| Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys |
| | | 35 | | | | | 40 | | | | | 45 | | | |

<210> 38

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (44)...(44)

<223> Xaa is leu, ile, val, phe, or met.

<400> 38

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys |
| | | | 20 | | | | 25 | | | | | | 30 | | |
| Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | |
| | | 35 | | | | | 40 | | | | | 45 | | | |

<210> 39

<211> 47

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> Xaa is leu, ile, val, phe, or met

<400> 39

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| His | Gly | Gly | Ile | Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg |
| 1 | | | 5 | | | | 10 | | | | | 15 | | | |
| Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile |
| | | | 20 | | | | 25 | | | | | 30 | | | |
| Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | |
| | | 35 | | | | | 40 | | | | | 45 | | | |

<210> 40

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (43)...(43)

<223> Xaa is leu, ile, phe, val, or met

<400> 40

His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg
 1 5 10 15
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
 20 25 30
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40 45

<210> 41

<211> 46

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (42)...(42)

<223> Xaa is leu, ile, phe, val, or met

<400> 41

Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly
 1 5 10 15
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
 20 25 30
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40 45

<210> 42

<211> 45

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (42)...(42)

<223> Xaa is leu, ile, phe, val, or met

<400> 42

Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly
 1 5 10 15
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly

Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40 45

<210> 43
 <211> 45
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (41)...(41)
 <223> Xaa is leu, ile, val, phe, or met

<400> 43

Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
 1 5 10 15
 Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
 20 25 30
 Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40 45

<210> 44
 <211> 44
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (41)...(41)
 <223> Xaa is leu, ile, phe, val, or met

<400> 44

Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
 1 5 10 15
 Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
 20 25 30
 Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 45
 <211> 44
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (40)...(40)
 <223> Xaa is leu, ile, phe, val, met.

<400> 45
 Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
 20 25 30
 Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
 35 40

<210> 46
 <211> 43
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (40)...(40)
 <223> Xaa is leu, ile, phe, val, or met

<400> 46
 Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
 1 5 10 15
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
 20 25 30
 Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
 35 40

<210> 47
 <211> 43

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (39)...(39)

<223> Xaa is leu, ile, val, phe, or met.

<400> 47

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 48

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (39)...(39)

<223> Xaa is leu, ile, phe, val, or met

<400> 48

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ile | Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 49

<211> 42

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (38)...(38)

<223> Xaa is leu, ile, phe, val, or met

<400> 49

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | | | | | | |
| | | | 35 | | | | | 40 | | | | | | | |

<210> 50

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (38)...(38)

<223> Xaa is ile, leu, phe, val, or met

<400> 50

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asn | Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | | | | | | |
| | | | 35 | | | | | 40 | | | | | | | |

<210> 51

<211> 41

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (37)...(37)

<223> Xaa is ile, leu, val, phe, or met

<400> 51

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 52

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (37)...(37)

<223> Xaa is met, leu, ile, val, or phe

<400> 52

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | | | | | | | |
| | | | 35 | | | | 40 | | | | | | | | |

<210> 53

<211> 40

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (36)...(36)

<223> Xaa is ile, leu, val, phe, or met

<400> 53

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys | | | | | | | | |
| | | 35 | | | | 40 | | | | | | | | | |

<210> 54

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (36)...(36)

<223> Xaa is leu, ile, met, phe, or val

<400> 54

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | | | | | | | | |
| | | 35 | | | | | | | | | | | | | |

<210> 55

<211> 39

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (35)...(35)

<223> Xaa is leu, val, ile, met, or phe

<400> 55

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gln | Leu | Tyr | Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

1 5 10 15
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
 20 25 30
 Lys Cys Xaa Arg Arg Lys Lys
 35

<210> 56

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (35)...(35)

<223> Xaa is ile, leu, val, phe, or met

<400> 56

Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
 1 5 10 15
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
 20 25 30
 Lys Cys Xaa Arg Arg Lys
 35

<210> 57

<211> 38

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (34)...(34)

<223> Xaa is ile, leu, val, phe, or met

<400> 57

Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
 1 5 10 15
 Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
 20 25 30

<210> 58
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (34)...(34)
<223> Xaa is ile, leu, val, phe, or met

<210> 59
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (33)...(33)
<223> Xaa is ile, leu, met, phe, or val

```

<400> 59
Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
 1          5          10          15
Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
      20          25          30
Xaa Arg Arg Lys Lys
      35

```

<210> 60
 <211> 36
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (33)...(33)
 <223> Xaa is ile, leu, val, phe, or met

<400> 60
 Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
 1 5 10 15
 Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
 20 25 30
 Xaa Arg Arg Lys
 35

<210> 61
 <211> 36
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (32)...(32)
 <223> Xaa is leu, ile, val, met, or phe

<400> 61
 Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
 1 5 10 15
 Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
 20 25 30
 Arg Arg Lys Lys
 35

<210> 62
 <211> 35
 <212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (32)...(32)

<223> Xaa is phe, val, ile, leu, or met

<400> 62

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Lys | Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa |
| | | | 20 | | | | 25 | | | | | | 30 | | |
| Arg | Arg | Lys | | | | | | | | | | | | | |
| | | 35 | | | | | | | | | | | | | |

<210> 63

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> Xaa is ile, leu, phe, val, or met

<400> 63

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg |
| | | | 20 | | | | 25 | | | | | 30 | | | |
| Arg | Lys | Lys | | | | | | | | | | | | | |
| | | 35 | | | | | | | | | | | | | |

<210> 64

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> Xaa is ile, leu, val, phe, or met

<400> 64

| | | | | | | | | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cys | Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Arg Lys | | | | | | | | | | | | | | | |

<210> 65

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)

<223> Xaa is ile, leu, val, phe, or met

<400> 65

| | | | | | | | | | | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg |
| | | | 20 | | | | | 25 | | | | | 30 | | |
| Lys Lys | | | | | | | | | | | | | | | |

<210> 66

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)

<223> Xaa is leu, ile, val, phe, or met

<400> 66

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |
| Glu | Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg |
| | | | 20 | | | | | 25 | | | | | 30 | | |

Lys

<210> 67

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)

<223> Xaa is ile, leu, val, phe, or met

<400> 67

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys |
| | | | 20 | | | | | 25 | | | | 30 | | | |

Lys

<210> 68

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)

<223> Xaa is leu, ile, phe, val, or met

<400> 68

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Val | Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Cys | Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys |
| | | 20 | | | | | | 25 | | | | | 30 | | |

<210> 69

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (28)...(28)

<223> Xaa is ile, leu, phe, val, or met

<400> 69

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | Lys |
| | | 20 | | | | | | 25 | | | | | 30 | | |

<210> 70

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (28)...(28)

<223> Xaa is leu, ile, met, val, or phe

<400> 70

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys |
| 1 | | | | 5 | | | | 10 | | | | | 15 | | |
| Ile | Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | |
| | | 20 | | | | | | 25 | | | | | 30 | | |

<210> 71

<211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Defensin polypeptide

<221> VARIANT
 <222> (27)...(27)
 <223> Xaa is ile. leu. met, phe, or val

<400> 71

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
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 <211> 30
 <212> PRT
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<221> VARIANT
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<400> 72

| | | | | | | | | | | | | | | | |
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| Gly | Gly | Arg | Cys | Ala | Val | Leu | Ser | Cys | Leu | Pro | Lys | Glu | Glu | Cys | Ile |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Gly | Lys | Met | Ser | Thr | Arg | Gly | Arg | Lys | Cys | Xaa | Arg | Arg | Lys | | |
| | | | 20 | | | | | 25 | | | | | 30 | | |